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Simulating the century

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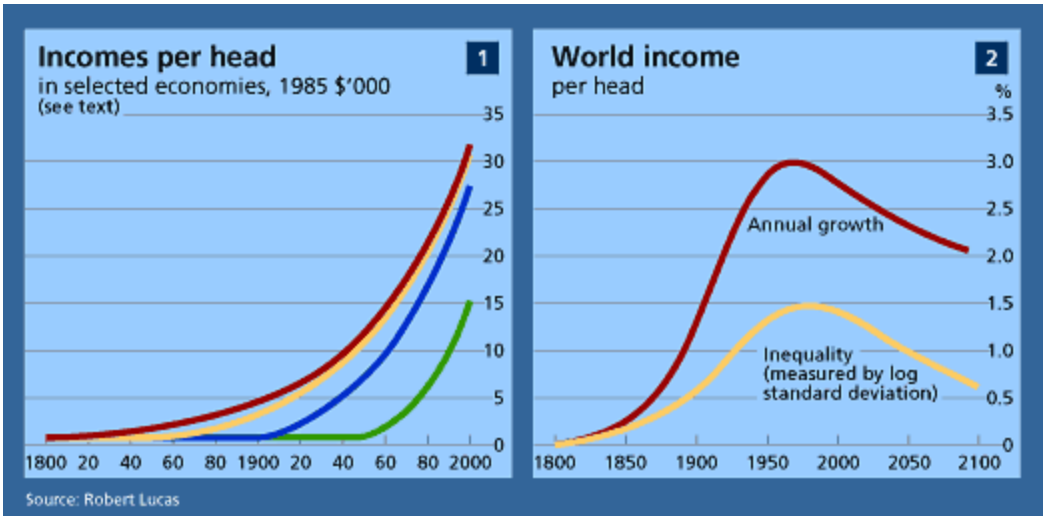
It is often supposed that the world's poor countries are doomed to stay poor. Persisting inequalities among the world's economies appear to bear out this idea. A different theory is more plausible

OVER the past two centuries of rapid global growth, the gap in incomes between rich and poor countries has widened dramatically. In more recent decades, the gap seemed to stabilise somewhat, as many once-poor countries made faster progress—but, in the aggregate, income inequality among nations has failed to diminish. In some quarters this has come to be regarded as the natural, or at any rate global-capitalist, order of things: the rich get richer and so do the poor, but without ever catching up.

To believe that the gap is immutable, however, is a mistake, as a simple model makes clear. The same process that has increased international inequality in the past could well reduce it, and almost as sharply, over the coming century. Robert Lucas, a professor of economics at the University of Chicago (and a hugely influential economic theorist), offers this model and its striking result in a forthcoming issue of the *Journal of Economic Perspectives* devoted to essays on the future of the discipline.



Imagine a world made up, like our own, of many different economies. Suppose each of them had an average income per head of $600 (in 1985 dollars) in pre-industrial times—in 1800, say. Also suppose that starting in 1801 one of these countries began to experience steady and continuous growth, at a per person rate of 2% a year. This hypothetical leader would by now, 200 years later, have an average income of more than $30,000.

Further suppose that in due course, and after varying delays, other countries also started to grow.

Assume in fact that they grew faster than the leader: at 2% a year plus a margin proportional to the gap between follower and leader. Eventually the followers will catch up; from then on all countries will grow at the same rate of 2%. Again, to be specific, set this catch-up margin so that a new entrant in 1850 grows initially at 4.5%, a new entrant in 1900 at 7%, and so on, with the initial margin increasing at a rate of 2.5 percentage points for every 50 years of delay before growth begins. The left-hand chart shows the resulting pattern for four equally-spaced economies: the later each country starts to grow, the bigger the starting-gap between it and the leader, and the faster its initial growth.

In this model, what decides the delay before any given country takes off? It assumes that a country's chance of embarking on growth depends on average incomes in the world at that date: the richer the world as a whole, the greater the chance that any given pre-industrial country will begin to grow. The particular numbers Mr Lucas chooses yield, accordingly, a pattern of growth that starts quite slowly in the 19th century (when global incomes are low), accelerates markedly during much of the 20th century (as global incomes increase), and then tails away late in the 20th century (because by this time there are fewer remaining pre-industrial economies where growth has not yet begun).

This skeletal model therefore has two kinds of international growth "spillover". First, the rate of growth, once growth has begun, depends on the income gap between leader and follower. Second, the chance of starting to grow in the first place depends on incomes in the world as a whole. Modern economic theories have a lot to say about how both these kinds of catching-up spillover might operate. Some economists emphasise human capital (knowledge produced anywhere can benefit producers everywhere); others point to the role of policies and institutions in the process of diffusion; still others are mainly interested in diminishing returns (arguing, for instance, that high wages in the leaders cause capital to flow elsewhere).

Mr Lucas's paper, however, makes two points. First, this simple model tracks the main facts of global growth better than you might think—as it should, given that Mr Lucas has calibrated it with this in mind. Second and more interesting is what the model, if true, then says about the future.

This can be crisply stated. Starting towards the end of the 20th century, growth in this hypothetical world economy starts to slow. This is because so many countries have already moved through the earliest and fastest stages of the catch-up process. From now on, in a transition lasting decades, the world slowly converges on its (assumed) long-term growth rate of 2%. For this very reason, though, inequality among nations diminishes too. Think about that. Exactly the same capitalist arithmetic of diffusing prosperity which caused international inequality to rise for 150 years after 1800 causes it to fall over the next century.

If Mr Lucas's chosen values are at all accurate, the coming decline in inequality will be steep. The past few decades' stability in measures of global inequality would not after all point to an irreducible gap between rich nations and poor. On the contrary: the past few decades would represent a turning point, so far as equality was concerned, in a centuries-long process by which the economic advances of the industrial revolution were spread right around the globe.